

March 2014 Regional Climate Summary

For the San Francisco Bay Area and Monterey Bay Area

March started wet and ended wet. However, a persistent ridge of high pressure produced warm and dry weather during a two and a half week period that spanned the middle of the month from March 8 to March 24. The month as a whole ended up slightly warmer and drier than average.

Average temperatures for the month were above normal by about 3 to 5 degrees F at most climate stations. Six daily high temperature records were set during the peak of the mid-month warm spell, on March 12, 13 and 16.

March Regional Temperature Summary

Location	Average High	Normal High	Departure from Normal	Average Low	Normal Low	Departure from Normal
North Bay						
Angwin	63.1	60.7	2.4	43.4	40.8	2.6
Calistoga	67.0	67.2	-0.2	46.0	40.4	5.6
Kentfield	68.3	64.2	4.1	46.1	44.4	1.7
Napa	71.0	66.6	4.4	47.2	43.5	3.7
Napa Airport	66.9	64.1	2.8	43.0	40.2	2.8
Occidental	64.5	61.7	2.8	46.2	44.6	1.6
Petaluma Airport	68.2	65.1	3.1	44.9	42.3	2.6
San Rafael	69.2	62.9	6.3	48.5	45.3	3.2
Sonoma County Airport	68.2	64.1	4.1	43.9	41.5	2.4
San Francisco Peninsula						
Half Moon Bay	63.5	59.9	3.6	45.8	42.7	3.1
Redwood City	69.3	64.9	4.4	46.9	44.7	2.2
San Francisco Airport	66.3	62.1	4.2	51.7	47.7	4.0
San Francisco Downtown	64.7	61.8	2.9	51.9	48.5	3.4
East Bay						
Antioch	69.1	65.5	3.6	50.3	45.3	5.0
Berkeley	67.7	64.2	3.5	48.4	45.7	2.7
Concord	70.6	66.5	4.1	49.5	46.4	3.1
Concord Airport	69.0	65.8	3.2	47.0	45.0	2.0
Fremont	69.2	65.3	3.9	47.9	46.3	1.6
Hayward Airport	66.5	63.7	2.8	48.4	47.4	1.0
Livermore	70.6	65.6	5.0	46.1	43.9	2.2
Livermore Airport	70.0	64.6	5.4	46.1	42.4	3.7
Martinez	68.5	66.3	2.2	43.5	40.7	2.8
Mount Diablo Junction	62.0	59.8	2.2	46.9	41.8	5.1
Newark	68.1	64.5	3.6	50.4	47.7	2.7
Oakland	68.5	63.9	4.6	51.1	48.5	2.6
Oakland Airport	67.4	62.6	4.8	50.3	46.1	4.2
Richmond	67.1	63.9	3.2	50.7	47.5	3.2

South Bay and Santa Cruz County						
Gilroy	73.4	68.5	4.9	45.8	43.3	2.5
Los Gatos	70.9	65.6	5.3	44.9	42.9	2.0
Moffett Federal Airfield	69.5	65.0	4.5	50.3	47.3	3.0
Mount Hamilton	54.5	50.4	4.1	42.2	38.6	3.6
San Jose	70.1	65.7	4.4	48.5	46.6	1.9
Santa Cruz	71.0	66.4	4.6	46.9	44.4	2.5
Watsonville	68.8	64.4	4.4	47.1	43.9	3.2
Watsonville Airport	67.2	62.9	4.3	46.6	43.5	3.1
Monterey and San Benito Counties						
Carmel Valley	71.0	65.8	5.2	42.7	42.1	0.6
Hollister	70.0	66.1	3.9	45.8	42.4	3.4
King City	73.8	70.2	3.6	44.5	42.1	2.4
Monterey	64.5	60.8	3.7	48.1	45.4	2.7
Monterey Airport	65.5	60.7	4.8	48.4	45.6	2.8
Pinnacles National Park	71.8	66.6	5.2	40.4	37.6	2.8
Salinas	70.4	65.1	5.3	45.1	43.3	1.8
Salinas Airport	69.2	64.7	4.5	47.7	44.7	3.0

Daily High Temperature Records for March 2014			
Date	Location	Record Max Temp	Previous Record and Year
3/12	Oakland Airport	78	76 in 2007
3/12	Monterey	78	78 in 2007
3/13	San Francisco Airport	76	76 in 1994
3/13	Oakland Museum	78	78 in 1994
3/16	Gilroy	86	85 in 2004

The wet weather pattern that produced significant rainfall at the end of February continued into the early part of March. An area of low pressure circulating off the central California coast on Saturday March 1 produced bands of showers which swept inland across the region. The most widespread shower activity occurred from Santa Cruz County southward where as much as an inch of rain fell that day. Rainfall amounts tapered off to the north and east. A few thunderstorms formed over the coastal waters, but none of these storms made it inland.

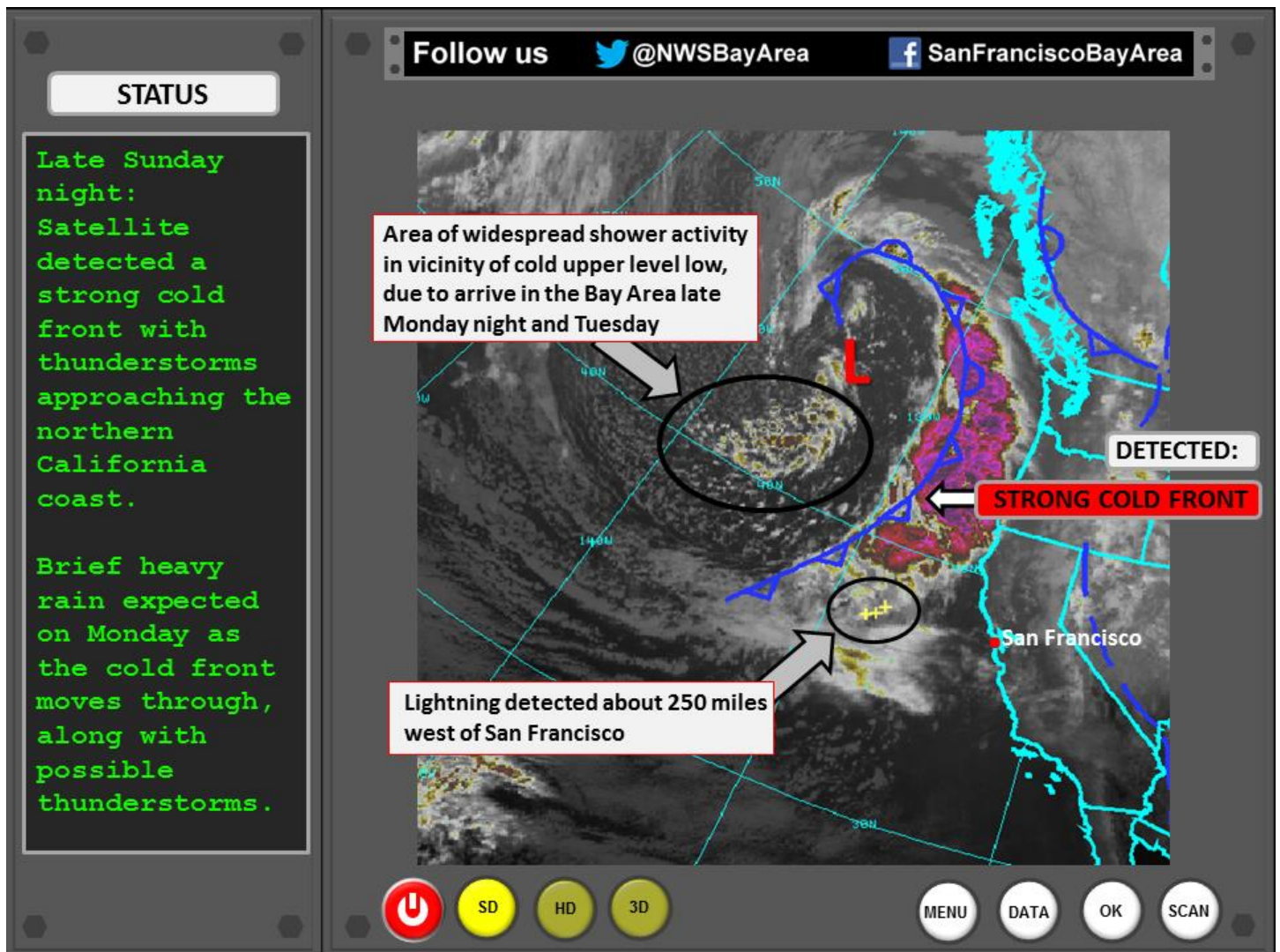


Rainbow after a shower: Photo taken from the roof of the National Weather Service Building in Monterey on the afternoon of Saturday March 1.

Light amounts of rain continued to fall periodically through March 2 and 3. Then, one more weather system moved through on the night of Wednesday, March 5. Rainfall from this system lasted a relatively short time and was mostly confined the San Francisco Bay Area. Rain rates in the Bay Area were briefly heavy that night as a band of intense showers and isolated thunderstorms rolled through. There were numerous reports of lightning in the Bay Area, mostly across the East Bay.

After rainfall ended during the early morning hours of March 6, dry weather prevailed for more than two weeks until a series of Pacific storm systems moved through the region during the final week of the month. The first system brought light to moderate amounts of rain to the area from late on March 25 through the morning of March 27. A stronger and wetter storm then pushed ashore on Saturday, March 29, dropping anywhere from 0.25 to 1.5 inches of rain across the region with isolated amounts up to 2 inches in the North Bay. One final March storm system swept through the area on the afternoon of Monday, March 31. A strong cold front produced a period of heavy rain that afternoon, along with isolated thunderstorms. Snow levels dropped to

3000 feet and locally lower. One inch of snow accumulated at Lick Observatory atop Mount Hamilton. Although rain rates were heavy with the cold front, the duration of heavy rain was brief and so rain totals on the 31st were generally less than three-quarters of an inch.



Satellite image taken during the early morning hours of Monday, March 31, showing a strong cold front approaching the California coast.

Rain totals for March were below normal at most climate stations, due in large part to the extended dry period in the middle of the month. Because much of March's precipitation was convective in nature, the percent-of-normal values varied quite a bit across the region. Some climate stations accumulated only half of their normal March precipitation, while a few spots (Muir Woods, Richmond, and Pinnacles National Park) managed to pick up more than 100 percent of their March average rainfall.

On March 31, year-to-date rain totals for the rain year that began on July 1, 2013, were generally 40 to 50 percent of normal (PON), and as high 60 PON in the East Bay and 70 PON in the North Bay. These PON values had not changed significantly since the end of February.

March Regional Precipitation Summary:

Location	March Rainfall	Normal Mar Rainfall	Percent of Normal
North Bay			
Angwin	4.97	5.66	88
Calistoga	3.58	5.77	62
Kentfield	4.49	6.56	68
Muir Woods	6.75	5.26	128
Napa	3.38	3.87	87
Napa Airport	1.54	2.50	62
Occidental	6.10	7.42	82
Petaluma Airport	2.90	3.79	77
San Rafael	2.77	4.59	60
Sonoma County Airport	2.38	4.98	48
Sonoma	3.59	4.39	82
San Francisco Peninsula			
Half Moon Bay	1.99	4.22	47
Redwood City	1.60	3.13	51
San Francisco Airport	1.93	2.96	65
San Francisco Downtown	2.95	3.26	90
East Bay			
Antioch	1.26	2.08	61
Berkeley	3.43	3.86	89
Concord	1.88	2.53	74
Concord Airport	1.87	2.37	79
Fremont	1.32	2.92	45
Hayward Airport	1.53	2.63	58
Livermore	1.25	2.36	53
Livermore Airport	1.35	2.20	61
Martinez	1.87	2.86	65
Mount Diablo Junction	2.75	3.52	78
Newark	1.13	2.34	48
Oakland	2.57	3.39	76
Oakland Airport	2.65	3.08	86
Richmond	3.73	3.37	111
South Bay & Santa Cruz County			
Ben Lomond	5.68	7.16	79
Los Gatos	1.92	3.63	53
Moffett Federal Airfield	1.48	2.26	65
Mount Hamilton	3.58	4.04	89
San Jose	1.35	2.54	53
Santa Cruz	3.76	4.63	81
Watsonville	2.54	3.63	70
Watsonville Airport	2.29	2.78	82

Monterey and San Benito Counties			
Carmel Valley	2.16	3.07	70
Hollister	1.33	2.36	56
King City	1.15	2.20	52
Monterey	2.34	3.38	69
Monterey Airport	2.30	2.76	83
Pinnacles National Park	3.13	3.11	101
Salinas	1.53	2.74	56
Salinas Airport	1.15	2.26	51

Miscellaneous March Climate Information:

Monthly Ranks for Downtown San Francisco		
Average High Temperature	64.7 deg	19 th warmest March out of 140 years
Average Low Temperature	51.9 deg	10 th warmest March out of 140 years
Precipitation	2.95 in	70 th wettest March out of 165 years

Monthly Extremes for Select Locations			
Location	Max Temp: Warmest Day(s)	Min Temp: Coolest Day(s)	Precipitation: Wettest Day(s)
Sonoma County Airport	3/15	3/25	3/31
	80 degrees	36 degrees	0.67 inches
San Francisco	3/15	3/31	3/31
	76 degrees	47 degrees	0.76 inches
Livermore Airport	3/16	3/13, 3/19	3/31
	83 degrees	38 degrees	0.47 inches
San Jose	3/9	3/31	3/31
	81 degrees	43 degrees	0.42 inches
Salinas Airport	3/9, 3/16	3/18	3/29
	79 degrees	41 degrees	0.38 inches

Other March 2014 Items:

On March 11, strong pressure gradients developed between high pressure over Oregon and low pressure near Las Vegas. These gradients resulted in locally strong and gusty northerly winds across the region on March 11 and 12. Wind speeds peaked between the evening of March 11 and the early morning hours of March 12.

Notable peak wind gusts are listed below:

Location	County	Peak Wind Gust	Time
Lick Observatory	Santa Clara	62 mph	1:00 am, March 12
Twin Peaks summit in San Francisco	San Francisco	60 mph	Morning of March 12
Oakland North RAWS (Berkeley Hills)	Alameda	59 mph	9:30 pm, March 11
Fort Funston	San Francisco	46 mph	7:00 am, March 12
Point San Pablo	Contra Costa	46 mph	6:00 am, March 12
Mallory Ridge RAWS	Contra Costa	45 mph	1:02 am, March 12